

**RTCA Special Committee 209**

**Working Group #1**

**Mode S Transponder MOPS Development/Maintenance**

**Meeting #1**

**RTCA, Washington DC  
3 – 5 April 2007**

**L-3 / ACSS Response to Action Item 6-3  
Transponder Reply Rate Capabilities**

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**SUMMARY**

This Working Paper summarizes the L-3/ACSS response to SC-209 Action Item 6-3 requesting the testing of the company transponders for reply rate capabilities.

Here are the results of the tests I ran on our XS-950 ATDL Transponder:

1. Transponder Calibration data modified to increase ATCRBS reply rate limiting from 650 to 1200.
2. Set up transponder and test equipment for a 15-pulse ATCRBS reply.
3. Interrogated with the following combinations and noted reply %:

Interrogation Type	Rate	Reply %
ATCRBS	1200	100%
Interlaced Long Mode S/ATCRBS (1:10 ratio)	1320 (this represents 1200 ATCRBS and 120 Mode S interrogations/second)	ATCRBS – 100%, occasionally dropping to as low as 87% Mode S – 100%, occasionally dropping to as low as 60%
Interlaced Long Mode S/ATCRBS (1:20 ratio)	1260 (this represents 1200 ATCRBS and 60 Mode S interrogations/second)	ATCRBS – 100%, occasionally dropping to as low as 87% Mode S – 100%

4. Reset ATCRBS reply rate limiting to factory setting.
5. Interrogated with the following combinations and noted reply %:

Interrogation Type	Rate	Reply %
ATCRBS	1200	52-56%
Interlaced Long Mode S/ATCRBS (1:10 ratio)	1320 (this represents 1200 ATCRBS and 120 Mode S interrogations/second)	ATCRBS – 52% Mode S – 100%
Interlaced Long Mode S/ATCRBS (1:20 ratio)	1260 (this represents 1200 ATCRBS and 60 Mode S interrogations/second)	ATCRBS – 52% Mode S – 100%

I have not yet been able to test our RCZ-852 transponder.